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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,775	02/27/2004	Serge Bourbonnais	SVL920040007US1 3051P	1899

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EXAMINER	
GOFMAN, ALEX N	

ART UNIT	PAPER NUMBER
2162	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,775	BOURBONNAIS ET AL.	
	Examiner	Art Unit	
	Alex Gofman	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remarks

Amendment submitted March 22, 2007 has been considered by examiner. Claims 1-27 are pending.

Response to Arguments

1. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 10-16 and 23-27 rejected under 35 U.S.C. 102(b) as being anticipated by Georgakopoulos et al (Chronological Scheduling of Transactions with Temporal Dependencies), hereinafter, Georga.

Claims 1 and 14: Georga discloses a method and computer readable medium for handling transaction messages in asynchronous data replication in a database system, the database system including a source node and a target node, each

transaction message information concerning at least one row change to a table copy at the source node, comprising:

a. determining whether a first transaction message has a dependency on a preceding non-completed transaction message, the first transaction message having a dependency on the preceding non-completed transaction when a row change associated with the preceding non-completed transaction requires application to a table copy at the target node prior to a row change associated with the first transaction message (page 2 paragraph 2, page 6 paragraph 2). [A row change is any change to a database.]

b. responsive to the first transaction message having a dependency on the preceding non-completed transaction:

b1. holding the first transaction message (page 4-5 section 2.1). [In succession dependencies a transaction is ordered in a specific way and thus one transaction is constrained until the preceding transaction is complete.]

b2. completing the preceding non-completed transaction message including applying the row change associated with the preceding non-completed transaction message to the table copy at the target node (page 2 paragraph 2, page 6 paragraph 2).

c. responsive to completing the preceding non-completed transaction message, releasing the first message and applying the row change associated with the first transaction message to the table copy at the target node (page 4-5 section 2.1).

d. responsive to the first transaction message not having a dependency on the preceding non-completed transaction, applying the row change associated with the first transaction message to the table copy at the target node without holding the first transaction message (page 4-5 section 2.1). [If there are no constraints on the transaction, then the transaction goes through without waiting periods.]

Claims 2 and 15: Georga discloses the method and the medium of Claims 1 and 14 above and further discloses:

a. examining a plurality of transaction messages on a work queue by a plurality of agent threads (Page 11 Section 5).

b. applying in parallel row changes in each of the plurality of transaction messages by each of the plurality of agent threads (Page 11 Section 5).

c. updating a control table to indicate completion of the application of each of the plurality of transaction messages (Page 11 Section 5).

d. placing each completed transaction message on a done queue (Page 11 Section 5).

Claims 3 and 16: Georga discloses the method and the medium of Claims 2 and 15 above and further discloses:

a. examining each completed transaction message on the done queue (Page 11 Section 5).

b. determining if the completion of the completed transaction message clears the dependencies of any of the held transaction messages dependent upon the completed transaction message (Page 11 Section 5).

c. placing any of the held transaction messages onto the work queue, if the dependencies of the held transaction message have been cleared (Page 11 Section 5).

Claims 10 and 23: Georga discloses the method and the medium of Claims 2 and 15above, and further discloses removing the completed transaction message from a receive queue (Page 17 Section 5.3.1).

Claims 11 and 24: Georga discloses the method and the medium of Claims 10 and 23 above, and further discloses deleting the completed transaction message from the receive queue as part of a two-phase commit synchronization with the application of the completed transaction message (Page 17 Section 5.3.1, Page 24 Section 7).

Claims 12 and 25: Georga discloses the method and the medium of Claims 10 and 23 above, and further discloses obtaining at least one entry in a control table at the target node indicating that the completed transaction message has been completed and deleting the completed transaction message from the receive queue (Page 17 Section 5.3.1, Page 24 Section 7).

Claims 13 and 26: Georga discloses the method and the medium of Claims 12 and 25 above, and further discloses removing the at least one entry from the control table (Page 17 Section 5.3.1, Page 24 Section 7).

Claim 27: Georga discloses a system comprising:

a. a source node, wherein the source node sends a first transaction message concerning a committed transaction completed at a source table copy to a target node to asynchronously replicate the transaction (page 10).

b. wherein the target node comprises a receive queue, a browser thread, a work queue, a done queue, an agent thread, and a target table copy

c. wherein the first transaction message concerning the transaction is received on the receive queue (Page 11 Section 5).

d. wherein the browser thread examines the first transaction message on the receive queue to determine if the first transaction message has a dependency on a preceding non-completed transaction message, the first transaction message having a dependency on the preceding non-completed transaction when a row change associated with the preceding non-completed transaction requires application to a table copy at the target node prior to a row change associated with the first transaction message (page 2 paragraph 2, page 6 paragraph 2). [A row change is any change to a database.]

e. wherein the first transaction message is held by the browser thread responsive to the first transaction message having a dependency on the preceding non-completed transaction message (page 4-5 section 2.1).

f. wherein the preceding non-completed transaction is placed in the done queue responsive to the row change associated with the preceding non-completed transaction message is applied to the table copy at the target node (Page 11 Section 5).

g. wherein the first transaction message is released and placed onto the done queue responsive to the row change associated with the preceding non-completed transaction message being applied to the table copy at the target node (Page 11 Section 5).

h. wherein the first transaction message is not held by the browser thread responsive to the first transaction message not having a dependency on the preceding non-completed transaction message and the row change associated with the first transaction is applied to the table copy at the target node (page 4-5 section 2.1).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4, 6, 8, 17, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georgakopoulos et al (Chronological Scheduling of Transactions with Temporal Dependencies), hereinafter, Georga in view of Sadiq et al (US Patent 6,029,177), hereinafter, Sadiq.

Claims 4 and 17: Georga discloses the method and the medium of Claims 1 and 14 above but does not explicitly disclose the limitations of Claim 4. However, Sadiq does:

a. determining that the row change in the first transaction message is an insert or a key update type of change (Column 5 ln 41-50).

b. comparing a new replication key value in the row change in the first transaction message to an old replication key value of a row change in the preceding non-completed transaction message (Column 7 ln 35-52).

c. determining that the first transaction message has dependency on the preceding non-completed transaction message if the new replication key value in the row change in the first transaction message is the same as the old replication key value in the row change in the preceding non-completed transaction message (Column 7 ln 35-52).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to determining that the row change in the first transaction message is an insert or a key update type of change, comparing a new replication key value in the row change in the first transaction message to an old replication key value of a row change in the preceding non-completed transaction message, determining that the first transaction message has dependency on the preceding non-completed transaction message if the new replication key value in the row change in the first transaction message is the same as the old replication key value in the row change in the preceding non-completed transaction message. One would have been motivated to do so in order to make sure transactions are made in proper order.

Claims 6 and 19: Georga discloses the method and the medium of Claims 1 and 14 above but does not explicitly disclose the limitations of Claim 6. However, Sadiq does:

a. determining that the row change in the first transaction message is an insert or a key update type of change (Column 5 ln 41-50).

b. comparing a new replication key value in the row change in the first transaction message to an old replication key value of a row change in the preceding non-completed transaction message (Column 7 ln 35-52).

c. determining that the first transaction message has dependency on the preceding non-completed transaction message if the new replication key value in the row change in the first transaction message is the same as the old replication key value in the row change in the preceding non-completed transaction message (Column 7 ln 35-52).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to determining that the row change in the first transaction message is an insert or a key update type of change, comparing a new replication key value in the row change in the first transaction message to an old replication key value of a row change in the preceding non-completed transaction message, determining that the first transaction message has dependency on the preceding non-completed transaction message if the new replication key value in the row change in the first transaction message is the same as the old replication key value in the row change in the preceding non-completed transaction message. One would have been motivated to do so in order to make sure transactions are made in proper order.

Claims 8 and 21: Georga discloses the method and the medium of Claims 1 and 14 above but does not explicitly disclose the limitations of Claim 6. However, Sadiq does:

a. determining that the row change in the first transaction message is an update type of change (Column 5 ln 41-50).

b. comparing a new replication key value in the row change in the first transaction message to an old replication key value of a row change in the preceding non-completed transaction message (Column 7 ln 35-52).

c. determining that the first transaction message has dependency on the preceding non-completed transaction message if the new replication key value in the row change in the first transaction message is the same as the old replication key value in the row change in the preceding non-completed transaction message (Column 7 ln 35-52).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to determining that the row change in the first transaction message is an insert or a key update type of change, comparing a new replication key value in the row change in the first transaction message to an old replication key value of a row change in the preceding non-completed transaction message, determining that the first transaction message has dependency on the preceding non-completed transaction message if the new replication key value in the row change in the first transaction message is the same as the old replication key value in the row change in the preceding

non-completed transaction message. One would have been motivated to do so in order to make sure transactions are made in proper order.

5. Claims 5, 7, 9, 18, 20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Georgakopoulos et al (Chronological Scheduling of Transactions with Temporal Dependencies), hereinafter, Georga in view of Sadiq et al (US Patent 6,029,177), hereinafter, Sadiq and further in view of Chen et al(US Patent Application Publication 2002/056761), hereinafter, Chen.

Claims 5 and 18: Georga as modified discloses the method and the medium of Claims 4 and 17 above, but does not explicitly disclose comparing a hash value of the new replication key value in the row change in the first transaction message to a hash value of the old replication value in the row change in the preceding non-completed transaction message. However, Chen does [0073]. It would have been obvious for one of ordinary skill in the art at the time the invention was made to comparing a hash value of the new replication key value in the row change in the first transaction message to a hash value of the old replication value in the row change in the preceding non-completed transaction message. One would have been motivated to do so in order to use hash value as a key value.

Claims 7 and 20: Georga as modified discloses the method and the medium of Claims 6 and 19 above, but does not explicitly disclose comparing a hash value of the

new replication key value in the row change in the first transaction message to a hash value of the old replication value in the row change in the preceding non-completed transaction message. However, Chen does [0073]. It would have been obvious for one of ordinary skill in the art at the time the invention was made to comparing a hash value of the new replication key value in the row change in the first transaction message to a hash value of the old replication value in the row change in the preceding non-completed transaction message. One would have been motivated to do so in order to use hash value as a key value.

Claims 9 and 22: Georga as modified discloses the method and the medium of Claims 8 and 21 above, but does not explicitly disclose comparing a hash value of the new replication key value in the row change in the first transaction message to a hash value of the old replication value in the row change in the preceding non-completed transaction message. However, Chen does [0073]. It would have been obvious for one of ordinary skill in the art at the time the invention was made to comparing a hash value of the new replication key value in the row change in the first transaction message to a hash value of the old replication value in the row change in the preceding non-completed transaction message. One would have been motivated to do so in order to use hash value as a key value.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alex Gofman whose telephone number is (571)270-1072. The examiner can normally be reached on Mon-Fri 9am-3pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571)272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

6-5-07

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